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171318-01-01
November 17, 2008

Sharon Demeo
US Environmental Protection Agency – Region 1
1 Congress Street Suite 1100
Mail Code: CMP
Boston, MA 02114-2023

David Howland, Regional Engineer
Saadi Motamedi
Massachusetts Department of Environmental Protection
436 Dwight Street
Springfield, MA 01103

Re: **Mt. Tom Generating Company, LLC**
Mt. Tom Station
NPDES Permit MA0005339
Supplemental Information
Permit Renewal Application Date June 10, 1997

Dear Ms. Demeo:

On behalf of Mt. Tom Generating Company, LLC (Mt. Tom), we are providing supplemental information to the NPDES Permit Renewal Application previously submitted June 10, 1997. The supplemental information primarily addresses redirection of currently permitted discharge flows from one outfall to another. No modifications to existing discharge permit limitations are needed with respect to the supplemental information contained herein.

Mt. Tom Generating Company, LLC is currently under Administrative Consent Order with the Massachusetts Department of Environmental Protection to complete construction of air emission controls for emissions of mercury and sulfur dioxide from the Mt. Tom Station by October 2009. This includes construction of a Turbosorp System which uses dry hydrated lime to facilitate the removal of mercury and ash from the air emissions associated with coal combustion. The attached drawings provide an isometric view of the new Turbosorp equipment and an overview of proposed stormwater and wastewater piping modifications for the Turbosorp system. Mt. Tom requests that EPA review this submittal to confirm that no NPDES permit modifications are needed for the plant modifications to allow full compliance in accomplishing these important environmental improvements.

The installation of the Turbosorp system will have minor impacts to the NPDES permitted stormwater and process wastewater discharges from the site. The changes in projected flows are minimal compared to currently permitted discharge volumes and review of current actual flow rates indicates that no modifications to discharge limits are required. Therefore, Mt. Tom is submitting this as supplemental information to EPA in association with the permit renewal application already on file, rather than as a permit modification request.

they know that this is not possible

The construction of the Turbosorp system will result in the need to redirect a portion of stormwater flows to different existing NPDES permitted discharge outfalls at the Mt. Tom Power Facility. There will be no new or modified outfall structures required and minimal net increase in combined stormwater/process wastewater discharges. The changes simply reflect modifications to site drainage patterns required to address the grading needed for construction of the Turbosorp system, collection and treatment of stormwater that has the



potential to come into contact with residuals, and collection and discharge of stormwater from roof drains.

In association with redirecting portions of stormwater flows, there will be a minor increase in process wastewater associated with the collection and treatment of stormwater that may have the potential to come into contact with trace amounts of ash solids and/or lime collected on the proposed ash silo truck loading apron and Turbosorp unit drains. A summary of proposed handling of water from all new drains is provided below. The capacity of the treatment facility itself is believed to be more than adequate to handle the increased flow and no modification of the treatment system itself is planned.

The Mt. Tom Station operates under an Individual NPDES permit covering both process wastewater and stormwater discharges. However, in preparing this submittal, the newly released Multi-sector General Permit (MSGs) permit requirements have also been reviewed to assure that the Individual Permit meets the intent of these regulations. No provisions of the new MSGs rules have been identified as being in conflict with requirements of the Individual NPDES Permit for the Mt. Tom Station.

Drain Discharge Summary

Rainfall data used in the following summaries is based on a 10-year storm of 4.5 inches per day and a 90th percentile monthly maximum precipitation of 7.68 inches per month. For ease of calculating these volumes, the 4.5 inch storm would contribute 2813 gallons per 1000-square feet of collection area per day. Similarly the 7.68 inches would contribute a monthly average of 160 gallons per 1000-square feet of collection area per day.

Wash water to be used at the Turbosorp and ash silo for equipment and general cleanup is estimated to be a 10 gpm rate for 30 minutes approximately four times per month at each location. This constitutes only 2400 gallons per month added to the drain discharges from the areas listed below.

TurboSorp Unit Drains

The Turbosorp unit includes a drain for periodic cleanup operations and rainfall runoff. Because there is the potential for the wash water and rain water to contain some contaminants, the drain will be piped to the existing sump (adjacent to the existing ash silos) and discharged for treatment in the facility's wastewater treatment plant (WWTP) which include polymer addition and plate settling equipment with pH neutralization prior to discharge to the Connecticut River via existing Outfall 002. The apron area of the Turbosorp is 1400 square feet yielding a maximum daily storm flow of 3938 gallons (see above for calculations). Wash water would only contribute an average of 40 gallons per day. These flows would be small enough not to require an increase in facility discharge flow limits. (Refer to Outfall Modification Summary below.)

Ash Silo Drains

A truck loading apron is being constructed to collect all precipitation. Additionally wash water, a safety shower and other minor drains will be collected in the vicinity of the ash silo loading conveyors. This flow may contain some ash residuals as well as periodic wash down water from the pug mill. Wastewater from this area will be directed to the existing WWTP. Stormwater from the apron area is currently discharged via Outfall 004 and will now be diverted to the WWTP and Outfall 002. The apron area of the Ash Silo is 3470 square feet yielding a maximum daily storm flow of 9760 gallons (see above for calculations). Wash

water would only contribute an average of 40 gallons per day. These flows would also be small enough not to require an increase in facility discharge flow limits. (Refer to Outfall Modification Summary below.)

Lime Silo Drains

A safety shower will be provided for the Lime Silo area. The safety shower area will be separately bermed from the Lime Silo. The safety showers will be supplied with potable water and will need to be tested on a routine basis to ensure proper operation. Discharge of potable water from this activity can be safely directed to the existing stormwater Outfall 004.

A truck loading apron will also be constructed to collect all precipitation that falls onto the lime silo loading area and may potentially contain some lime residuals. Wastewater from this area will be diverted to the existing WWTP. Stormwater from this area is currently discharged via Outfall 004 and will now be diverted to the WWTP and Outfall 002. The apron area of the Lime Silo is 1950 square feet yielding a maximum daily storm flow of 5485 gallons (see above for calculations). (Refer to Outfall Modification Summary below.)

Baghouse Roof Drain

The baghouse roof will have no external vents or other industrial activity that would be a potential source of contaminants. Therefore, stormwater from the roof drains will be diverted to Outfall 007 whereas it currently drains naturally to Outfall 004, both stormwater drainage outfalls. Based on a roof area of 5,250 square feet, the estimated maximum storm runoff would be 14,766 gallons per day.

Booster Fan Area Drains

Stormwater drainage from the Booster Fan area will have a potential for contact with small amounts of oil and grease. Stormwater from this area will be collected and treated for oil and grease removal using a Highland Tank oil-water separator, design information attached. After treatment the stormwater will be discharged to the currently permitted stormwater runoff Outfall 007. This area currently discharges to Outfall 007. Based on a surface area of 2240 sq.ft., the estimated maximum storm runoff would be 6300 gallons per day.

Form 1 - General Information

An updated and signed Form 1 is attached. Updated information includes changes to the facility Mailing address, name of the permittee, and official providing certification of the NPDES Permit Renewal Application with supplemental information.

Updated information for the Facility Mailing Address is as follows:

Mt. Tom Generating Company, LLC
c/o FirstLight Power Resources, LLC
20 Church Street, 16th Floor
Hartford, CT 06103
Attn: John Campbell, Senior Vice President – Asset Operations

Please note that since the time of the permit renewal application, the permit has been transferred to Mt. Tom Generating Company, LLC, as indicated in the attached documentation. Please also note correction to facility street address.

Outfall Modification Summary

As a summary, the modifications for each of the site outfalls are proposed:

Outfall 001 Once through cooling water No changes

Outfall 002 Wastewater treatment system

	Precipitation Redirected flow:		Wash water drain additions:	
	Daily Max.	Mo. Avg.	Daily Max.	Mo. Avg.
Turbosorp Unit Drains	3938	224	300	40
Ash Silo Drains	9760	555	300	40
Lime Silo Drains	5485	312		
Column Totals:	19183	1091	600	80
Grand total maximum daily addition to DSN002:			19783	
Total increment to peak monthly daily average:				1171

Compare against max. daily flow limit of 360,000 and monthly average of 216,000.

Outfall 003	Stormwater	No changes
Outfall 004	Stormwater	Redirect portion of flow from Outfall 004 to 002 and 007
Outfall 005	Traveling Screen Wash	No changes
Outfall 006	Reflecting Pool Overflow	No changes
Outfall 007	Oil Trap Overflow/Highway Runoff	Redirect portion of flow from Outfall 004 to 007
Outfall 008	Bottom ash pond	No NPDES changes
Outfall 009	Bottom ash pond	No NPDES changes
Outfall 010	Fly ash pond	No NPDES changes
Outfall 011	Fly ash pond	No NPDES changes

(Note: Some flows shown above are redirected stormwater flows to incorporate treatment at the WWTP for potential contaminants. Net additions of water volume for entire plan site is made up of wash water for the new Turbosorp areas and safety shower runoff and would be less than 1000 gallons per month.)

Specific modifications to information previously provided in the June 10, 1997 NPDES Permit Renewal Application is detailed below.

Form 2C

Form 2C provides information for estimated flows to the wastewater treatment system. A small portion of stormwater flows currently discharged via Outfall 004 will be redirected to the wastewater treatment system and Outfall 002. The total increase to Outfall 002 estimated at 19,783 gpd max day and 1,171 gpd peak monthly average. These values are well below the permitted discharge limits of 360,000 gpd and 216,000 gpd for maximum daily and average monthly flow, respectively. No permit modification is requested.

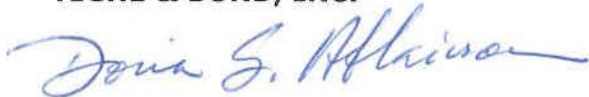
Form 2F

Modifications to permittee information as previously addressed only.

On behalf of Mount Tom Generating Company, we would be happy to discuss any questions you may have regarding the proposed modifications. In order to finalize facility design for this project, we would appreciate review of this submittal within 30 days to address any modifications needed. You can reach me by phone at (413) 875-1314 or by e-mail at DSAtkinson@TigheBond.com.

Very truly yours,

TIGHE & BOND, INC.



Doris S. Atkinson, P.E.
Senior Project Manager

Enclosures

Copy: John Campbell (w/encl)
Jim Merchant (w/ encl)
Dick Merchant (w/ encl)
Wally Ebner (w/ encl)
John Murray (w/out encl)

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FORM 1 GENERAL	U.S. ENVIRONMENTAL PROTECTION AGENCY GENERAL INFORMATION Consolidated Permits Program <i>(Read the "General Instructions" before starting.)</i>	I. EPA I.D. NUMBER <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:5%;">S</td> <td style="width:85%;">MAD000846105</td> <td style="width:5%;">T/A</td> <td style="width:5%;">C</td> </tr> <tr> <td>F</td> <td></td> <td></td> <td>D</td> </tr> <tr> <td>1</td> <td>2</td> <td>13</td> <td>14</td> </tr> <tr> <td></td> <td></td> <td>15</td> <td></td> </tr> </table>	S	MAD000846105	T/A	C	F			D	1	2	13	14			15																																							
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LABEL ITEMS MAD000846105 Mount Tom Station Mount Tom Generating Company, LLC		GENERAL INSTRUCTIONS If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent (the area to the left of the label space lists the information that should appear), please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete items I, III, V, and VI (except VI-B which must be completed regardless). Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.																																																						
III. FACILITY NAME PLEASE PLACE LABEL IN THIS SPACE																																																								
V. FACILITY MAILING ADDRESS c/o FirstLight Power Resources Services, LLC 20 Church Street, 16th Floor, Hartford, CT 06103																																																								
VI. FACILITY LOCATION 200 Northampton Street, Holyoke, MA 01040																																																								
II. POLLUTANT CHARACTERISTICS																																																								
INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms .																																																								
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C	6	Holyoke	MA	01040																																																				
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VII. SIC CODES (4-digit, in order of priority)

A. FIRST										B. SECOND									
C					(specify)	C					(specify)								
7	4	9	1	1		7													
15	16	-	19							15	16	-	19						
C. THIRD										D. FOURTH									
C					(specify)	C					(specify)								
7						7													
15	16	-	19							15	16	-	19						

VIII. OPERATOR INFORMATION

A. NAME										B. Is the name listed in Item VIII-A also the owner?										
C																				
8	Mount Tom Generating Company, LLC										<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO									
15	16									55	56									

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box: if "Other," specify.)

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box: if "Other," specify.)										D. PHONE (area code & no.)									
F = FEDERAL S = STATE P = PRIVATE										M = PUBLIC (other than federal or state) O = OTHER (specify)									
P										A									
56										15 16 - 18 19 - 21 22 - 26									

E. STREET OR P.O. BOX

c/o FirstLight Power Resources, 20 Church St. 16th Fl																									
26																									55

F. CITY OR TOWN

F. CITY OR TOWN										G. STATE		H. ZIP CODE		IX. INDIAN LAND		
C																
B	Hartford										CT		06103		Is the facility located on Indian lands? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
15	16									40	41	42	43	44	45	

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)										D. PSD (Air Emissions from Proposed Sources)									
C	T	I								C	T	I							
9	N		MA0005339							9	P								
15	16	17	18	19	20	21	22	23	24	30	31	32	33	34	35	36	37	38	39
B. UIC (Underground Injection of Fluids)										E. OTHER (specify)									
C	T	I								C	T	I							
9	U									9			0-42						
15	16	17	18	19	20	21	22	23	24	30	31	32	33	34	35	36	37	38	39
C. RCRA (Hazardous Wastes)										E. OTHER (specify)									
C	T	I								C	T	I							
9	R		MAD000846104							9									
15	16	17	18	19	20	21	22	23	24	30	31	32	33	34	35	36	37	38	39

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Electical Generation generated from steam produced by the combustion of fossil fuel.

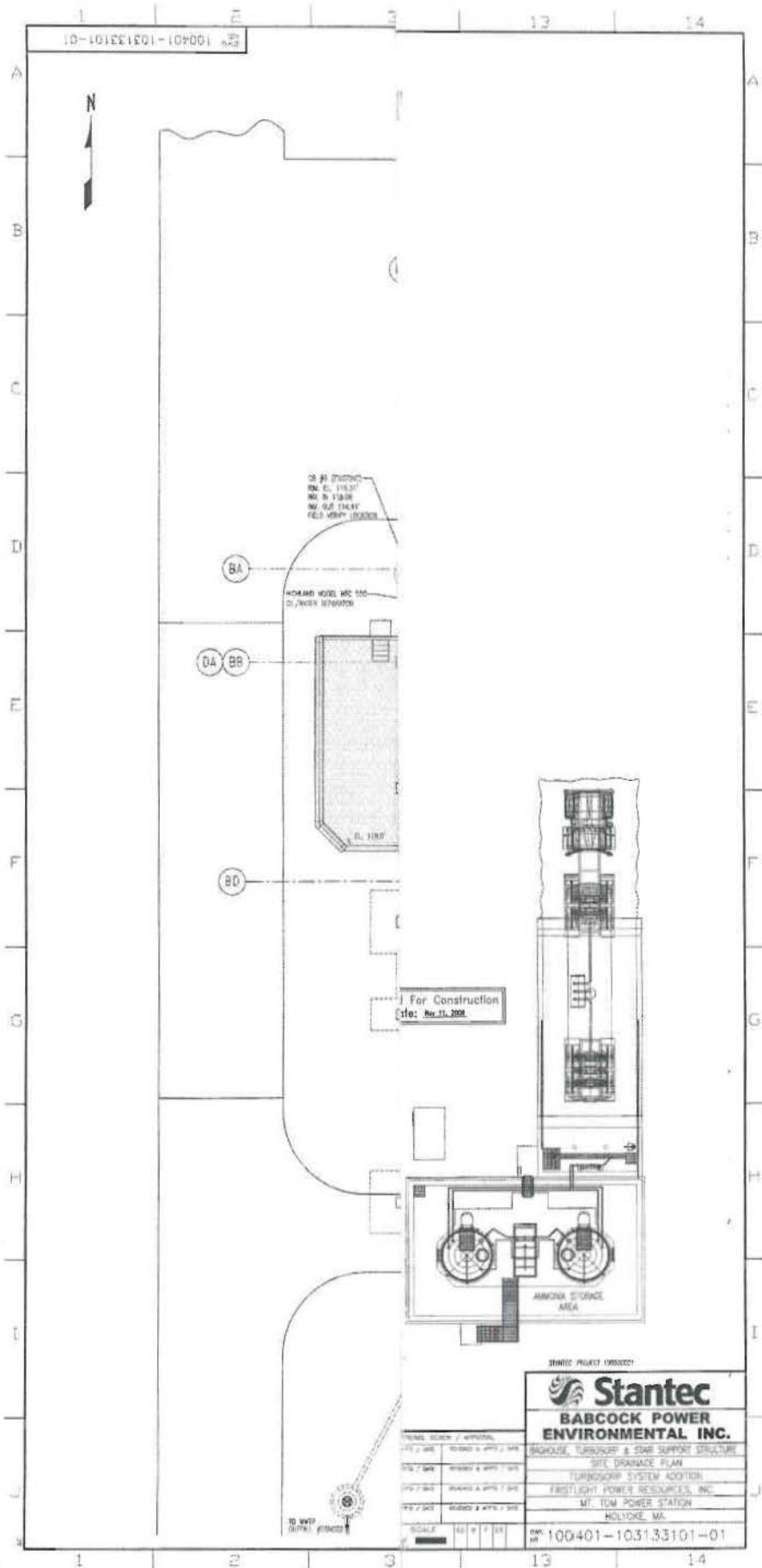
XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)										B. SIGNATURE										C. DATE SIGNED									
John Campbell										John Campbell										11-19-08									
Sen.Vice President-Asset Operations																													

COMMENTS FOR OFFICIAL USE ONLY

C																								
C																								
15	16																							50



STANTEC PROJECT 1000001

Stantec

BABCOCK POWER ENVIRONMENTAL INC.

BAGHOUSE, TURBIDITY & SINK SUPPORT STRUCTURE

SITE DRAINAGE PLAN

TURBIDITY SYSTEM ADDITION

FIRSTLIGHT POWER RESOURCES, INC.

MT. TOM POWER STATION

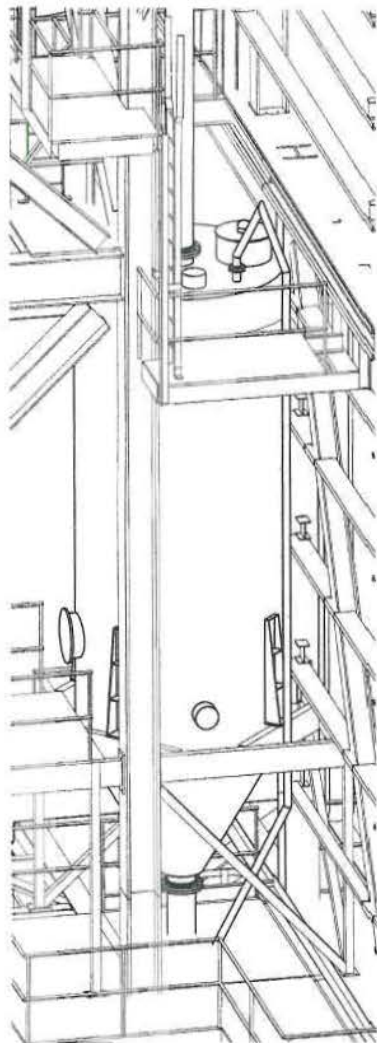
HOLYOKE, MA

DATE: 100401-103133101-01

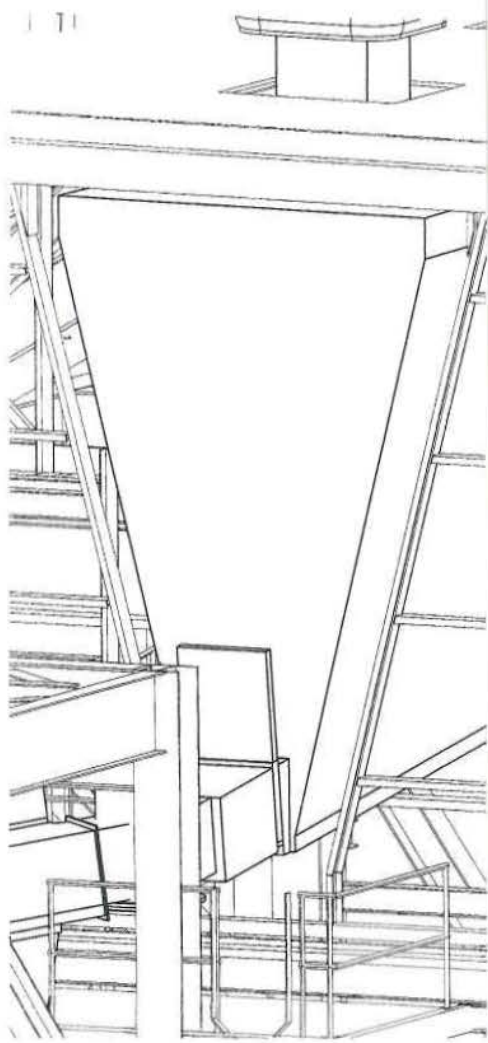
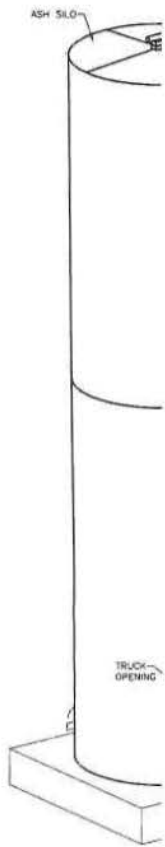
DATE	REVISION	BY	APP'D
10/2/01	REVISED & APPROVED		
10/2/01	REVISED & APPROVED		
10/2/01	REVISED & APPROVED		
10/2/01	REVISED & APPROVED		

SCALE: 1" = 10'

100401-102675107



ISOMETRIC VIEW SURGE BINS
(LOOKING SOUTHWEST)



ISOMETRIC VIEW AIR SLIDES
(LOOKING SOUTHWEST)

IN PROGRESS
7/11/08

NOTE: FOR
P.E. STAMP
SEE
REVISION
No. 01

3. DWG. WITH 100401-102675100.

Revision	FUNCTIONAL REVIEW / APPROVAL			
	REVIEWED & APPROVED / DATE	REVIEWED & APPROVED / DATE	REVIEWED & APPROVED / DATE	REVIEWED & APPROVED / DATE
1/06/07	M. GRAMES 1/29/08	B. WEST 1/29/08		
1/25/08	J. MILLER 1/29/08	S. HANCOCK 1/29/08		
1/17/08	J. MILLER 1/29/08	S. HANCOCK 1/29/08		
	SCALE	SCALE	SCALE	SCALE
	NOT SCALE	SCALE	SCALE	SCALE
	REVISIONS ONLY	N/A	ES	FR

BABCOCK POWER ENVIRONMENTAL INC.

GENERAL ARRANGEMENT
ISOMETRIC VIEWS
TURBOSORP SYSTEM ADDITION
FIRSTLIGHT POWER RESOURCES, INC.
MT TOM POWER STATION
HOLYOKE, MA

DWG. NO. 100401-102675107-03

Highland Series G Oil/Water Separators

UL-SU-2215 Approved



Highland Tank

Model HT or HTC	Total Volume Gallons	Total Spill Capacity Gallons	Inlet/ Outlet Diameter	Flow Rate gpm	Dimensions		Approx. Wt.* (lbs.)
					Diameter	Length	
**350	350	175	4"	35	3'6"	9'0"	2,781
550	550	275	4"	55	3'6"	10'9"	3,041
1,000	1,000	500	6"	100	4'0"	14'0"	4,441
2,000	2,000	1,000	6"	200	5'4"	15'0"	6,556
3,000	3,000	1,500	8"	300	5'4"	21'4"	7,936
4,000	4,000	2,000	8"	400	5'4"	28'8"	9,079
5,000	5,000	2,500	8"	500	6'0"	28'8"	10,335
6,000	6,000	3,000	10"	600	6'0"	34'0"	11,718
7,000	7,000	3,500	10"	700	7'0"	28'8"	14,387
8,000	8,000	4,000	10"	800	7'0"	33'6"	16,118
9,000	9,000	4,500	12"	900	8'0"	28'8"	16,862
10,000	10,000	5,000	12"	1,000	8'0"	32'0"	18,226
12,000	12,000	6,000	12"	1,200	8'0"	38'9"	20,990
15,000	15,000	7,500	14"	1,500	10'0"	32'8"	29,445
20,000	20,000	10,000	16"	2,000	10'6"	38'9"	36,000
25,000	25,000	12,500	18"	2,500	10'6"	46'6"	45,920
30,000	30,000	15,000	20"	3,000	10'6"	56'0"	53,399
40,000	40,000	20,000	24"	4,000	12'0"	56'9"	65,148

*Weights shown are for Model HTC Single-wall Separators. Contact Highland for all other weights. Plate spacing and orientation may vary depending on site conditions.

** One access manway in separations chamber, initialized

Series G Oil/Water Separators

Series G Oil/Water Separators feature an integral sand compartment to permit sand and grit to settle out of the wastewater before entering the oil/water separator.

Highland Oil/Water Separators are used specifically for the removal of free floating oil, grease, and settleable oily coated solids from oil/water discharges associated with many types of industrial facilities.

Designed to remove oils with a specific gravity less than .95, high performance separators from 15 ppm oil/grease discharge (Model HT) down to 10 ppm discharge (Model HTC) are available.

All separators are of the highest quality — constructed to American Petroleum Institute (API), Underwriters Laboratories (UL), and Steel Tank Institute (STI) ACT-100-U® or STI-P3® specifications.

Patents and approvals:

U.S. Patent # 4,722,800

Canadian Patent # 1,296,263

City of New York, Board of Standards and Appeals Under Calendar Number 1215-88-SA

Massachusetts Board of State Examiners of Plumber

and Gas Fitters Approval Code P1-0594-25

Passed DIN Parts 4 & 5; DIN 38-409 Part 18

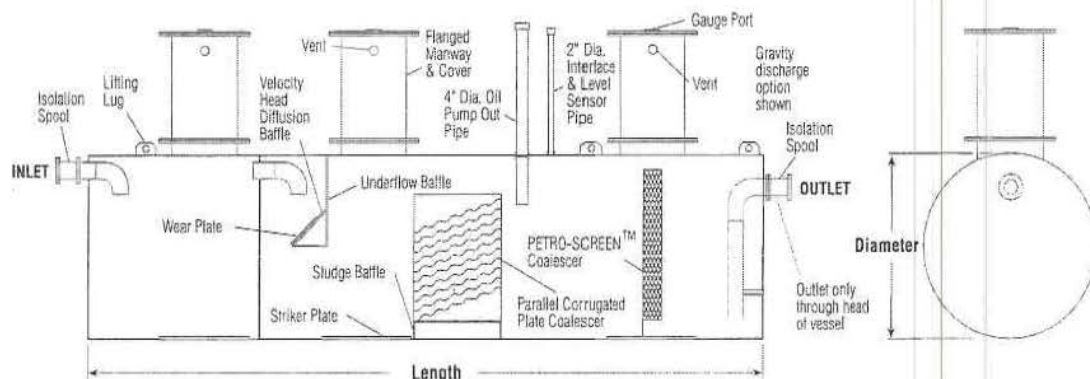
Testing and Analysis

General Arrangement

Model HTC

ACT-100-U®

Single-wall shown



Recommended Guideline Specifications

Series G Combination Sand and Oil/Water Separator

Provide and install _____ Highland Tank Underground Model _____ Series - G UL-SU-2215 Listed, Double-wall Type I, Parallel Corrugated Plate, Gravity Displacement, Combination sand and Oil/Water Separator. Separator(s) shall be furnished with oil level alarm and leak detection systems. combination Sand and Oil/Water Separator shall be _____ diameter x _____ long, having a total volume of _____ gallons. A Separator of smaller volume is not permissible.

Application

The separator shall be designed for gravity separation of sand, grit, settleable solids, or semisolids and free oils (hydrocarbons and other petroleum products) along with some settleable solids from wastewater. The source of the influent to the separator shall be gravity flow from stormwater runoff, hydrocarbon spills, and/or cleaning/maintenance operations.

Performance

The separator shall be listed to Underwriter's Laboratories UL-SU-2215. Provide certification documentation showing criteria under which the system was tested. The separator shall also be evaluated and tested in accordance with DIN 1999. Certification for DIN 1999 shall also be provided.

Influent Characteristics

The separator shall be designed for intermittent and variable flows of water, oil, or any combination of non-emulsified oil/water mixtures ranging from zero to _____ the unit's rated GPM flow. Operating temperatures of the influent oil in water mixture shall range from 40°F to 120°F. The specific gravity of the oils at operating temperatures shall range from 0.68 to 0.95. The specific gravity of the fresh water at operating temperatures shall range from 1.00 to 1.03.

Effluent Characteristics

The free oil and grease concentration in the effluent from the separator shall not exceed 10 mg/l (10 ppm). To achieve this goal, it will be necessary to remove all free oil droplets equal to and greater than 20 microns.

Design Criteria

Construction and performance certification of the separator shall be in strict accordance with Underwriter's Laboratories Subject 2215. Separator shall bear the UL-SU-2215 label.

Separator shall be designed in accordance with Stokes Law and the American Petroleum Institute Publication 421, "Monographs on Refinery Environmental Control - Management of Water Discharges; Design and Operation of Oil/Water Separators."

Oil/water separator construction shall comply with requirements of National Fire Protection Association NFPA 30 Flammable and Combustible Liquids Code, 1996 Edition.

Separator shall be cylindrical, horizontal, atmospheric-type steel vessel intended for the separation and storage of flammable and combustible liquids. Separator capacities, dimensions, construction, and thickness shall be in strict accordance with Underwriters Laboratories Subject UL-58 Standard for Safety, Steel Underground Tanks for Flammable and Combustible Liquid, Type I Double-wall construction with 360° steel secondary containment. The inner steel tank shall be completely contained within the outer steel tank, enclosing 100% of the tank's volume. The UL-58 Type I constructed tank must have a double steel shell with a space between the layers. The space

between the inner and outer steel walls shall be monitored for leaks with an approved electronic leak detection device.

The separator shall have the structural strength to withstand static and dynamic hydraulic loading while empty and during operating conditions.

Separator Corrosion Control System shall be in strict accordance with ACT-100-U® specifications as applied by a licensee of the Steel Tank Institute (STI). Manufacturer must be a licensee of STI. No assigning or subcontracting of STI licensing shall be permitted.

Separator shall be the standard product of a steel tank manufacturer regularly engaged in the production of such equipment, having at least 5 years experience in manufacturing similar units for identical applications.

Separator shall be fabricated, inspected, and tested for leakage before shipment from the factory by manufacturer as a completely assembled vessel ready for installation.

Separator shall have an oil storage capacity equal to about 43% of the total vessel volume and an emergency oil spill capacity equal to 80% of the total vessel volume.

General Description

Separator shall be a standard prepackaged, pre-engineered ready to install unit consisting of:

An influent connection _____ inch, flanged.

An internal influent nozzle at the inlet end of the separator, located at the furthest diagonal point from the effluent discharge opening.

A velocity head diffusion baffle at the inlet end that:

- Reduces horizontal velocity and flow turbulence
- Distributes the flow evenly over the separator's cross sectional area.
- Directs the flow in a serpentine path to enhance hydraulic characteristics and fully utilize entire separator volume.
- Completely isolates all inlet turbulence from the separation chamber.

A sediment chamber to disperse flow and collect oily solids and sediments.

A sludge baffle to retain settleable solids and sediment to prevent them from entering the separation chamber.

An Oil/Water Separation Chamber containing an inclined plate coalescer with removable, corrugated, protected plates, sloped toward the sediment chamber that:

- Shortens the vertical distance an oil globule has to rise for effective removal.
- Enhances coalescence by generating a slight sinusoidal (wave like) flow pattern causing smaller, slow rising, oil globules to coalesce together on the undersides of the plates forming larger, rapidly rising sheets of oil.
- Directs the paths of the separated oil to the surface of the separator.

A sectionized removable "PETRO-SCREEN™" polypropylene impingement coalescer designed to intercept oil globules of 20 microns in diameter and larger.

An internal effluent downcomer at the outlet end of the separator, to allow for discharge from the bottom of the separation chamber only.

An effluent pump connection _____ inch, flanged.

Fittings for vent, interface/level sensor, leak detection, and waste oil pump-out, sampling, and gauge.

Two (2) _____ diameter manholes, U.L. approved, complete with _____ extension, cover, gasket, and bolts. One manway shall be placed between the transfer pipe and the parallel corrugated plate coalescer to facilitate access into the sediment chamber for solids removal from above. One manway shall be placed between the parallel corrugated plate coalescer and outlet to facilitate access into the oil/water separation chamber for coalescer maintenance/removal and oil removal.

Lifting lugs at balancing points for handling and installation.

Identification plates: Plates to be affixed in prominent location and be durable and legible throughout equipment life.

Corrosion Protection System consisting of:

- Isolation spool pieces
- Dielectric isolation gaskets and bushings
- External surfaces commercial blast, coated 70 mils DFT polyurethane coating (ATC-100-U®)
- 30-year Limited Warranty

Internal surfaces commercial blast, coated 10 mils DFT polyurethane.

Accessories and Options

An audible and visual oil level and leak detection alarm system with silence control.

Dielectric hold down straps with turnbuckles.

Consult Highland Tank for:

- "EZ-Access" Option: Separator furnished with large rectangular accessway with removable coalescers to allow for total, unconfined, unrestricted, OSHA recommended top access for observation and maintenance.
- Special coatings (interior or exterior)
- Integral sand, oil or effluent compartments
- Level controls and automatic pump-out systems
- Heating systems, electric or steam
- Internal ladders
- Storage tanks and accessories
- STI-P3® corrosion protection system

Please visit us at www.highlandtank.com.



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518-273-0801
FAX 273-1365

2700 Patterson Street
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336-218-0801
FAX 218-1292

2225 Chestnut Street
Lebanon, PA 17042
717-664-0602
FAX 664-0631

1510 Stoystown Road
Friedens, PA 15541
814-443-6800
FAX 444-8662

Cylindrical Oil/Water Separators

Available with a UL-SU2215 Construction & Performance Label



Highland Tank®



Cylindrical Design

Highland Oil/Water Separators are used specifically for the removal of free floating oil, grease, and settleable oily coated solids from oil/water discharges associated with many types of petroleum, industrial, commercial, military, and municipal facilities.

Highland's separators help these facilities comply with the EPA's regulations for the proper treatment and discharge of contaminated storm water runoff. They also help these facilities satisfy their SPCC requirements for spill control and secondary containment.

Designed to remove oils with a specific gravity less than .95, high performance separators from 15 ppm oil/grease discharge (Model HT) down to 10 ppm discharge (Model HTC) are available.

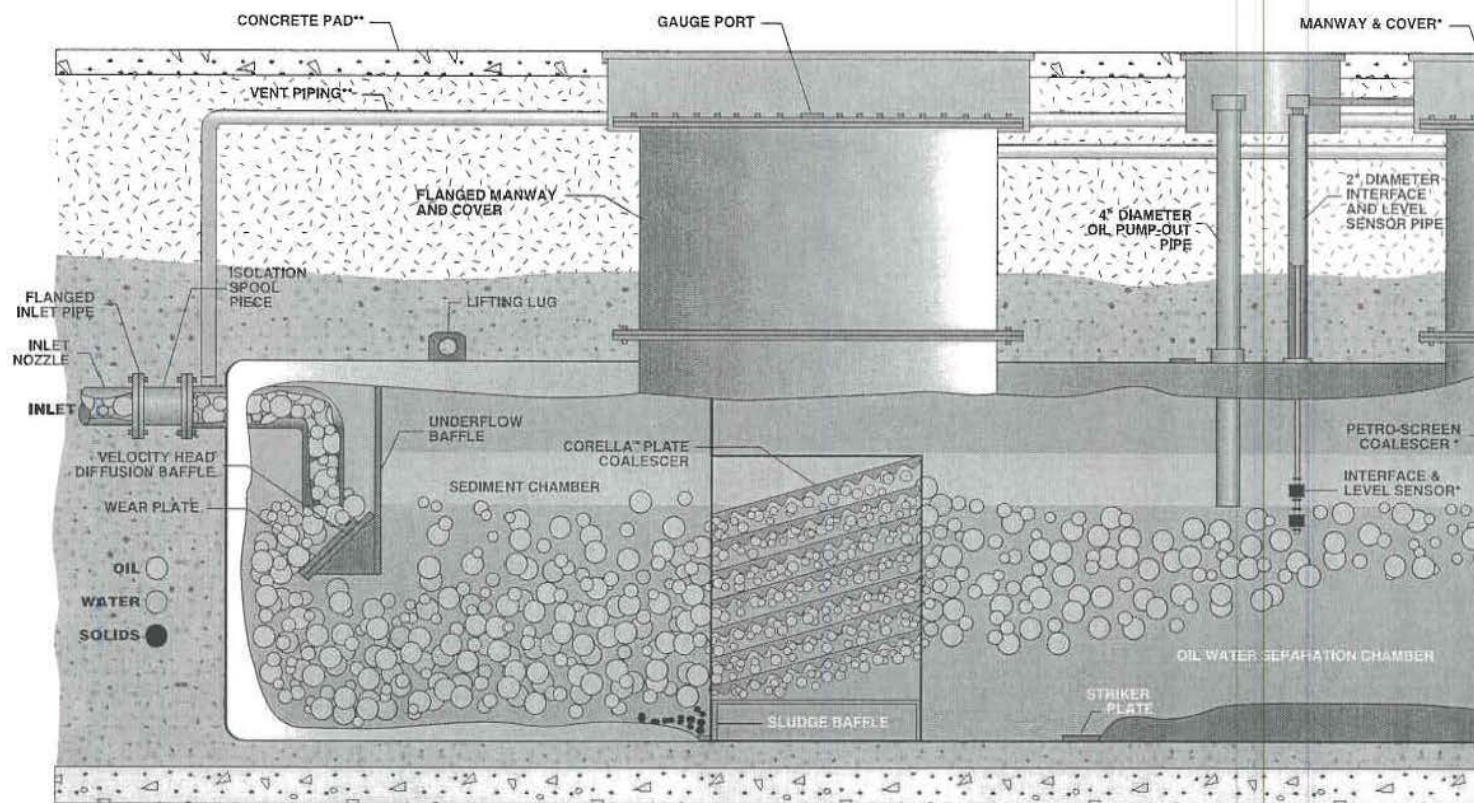
All Highland separators are equipped with Corella® inclined parallel plate coalescers that combines the features of both a flat plate coalescer and a corrugated plate coalescer into a new "self-cleaning" design that performs better than traditional plate separators.

Utilizing Highland's EZ Access manways, inspection of the Corella® is easy, without a dangerous confined space entry.

Highland separators are of the highest quality — constructed to American Petroleum Institute (API) and Underwriters Laboratories Inc. (UL) specifications.

Highland oil/water separators come in a variety of designs and are available in single-walled or double-walled construction for aboveground or underground installation.

How It Works . . .



* Optional equipment available from Highland Tank

** Installer supplied equipment

UL-SU2215 Listed Model HTC Oil/Water Separator with EZ-Access Option shown

Highland's Patented Design

Highland patented oil/water separators are stationary wastewater treatment vessels, filled with water. They contain specially designed internal baffles and coalescers to accelerate the separation process. The vessel is designed for unconfined access from above for inspection and maintenance.

Inlet flow is directed against the velocity head diffusion baffle to reduce flow turbulence and to distribute the flow evenly over the separator's cross sectional area. In the sediment chamber, heavy solids settle out and concentrated oil rises to the surface.

The oily water then passes through the Corella® Coalescer, an inclined arrangement of stacked parallel flat and corrugated plates.

The corrugated underside of the Corella® plates causes the oil to coalesce into sheets. The oil globules then rise to the surface of the separation chamber, where the separated oil accumulates.

Any remaining solids sink to the top of the plates and slide off of the plates to the solids collection area. The effluent flows downward to the outlet and is discharged by gravity displacement.

To intercept droplets of oil too minute to be removed by the parallel flat/corrugated plates, we use a Petro-Screen polypropylene impingement coalescer (an encased bundle of layered oil-attracting fibers). Large EZ-Access chambers allow for total, unconfined, unrestricted access from above to the removable Corella® and Petro-Screen coalescers for safe visual inspection, cleaning, and maintenance.

Electronic oil level controls sound an alarm at high oil levels so that waste oil can be removed from the separator. Double-walled separators are monitored with electronic leak detection systems for the interstitial space.

Patents and approvals:

Underwriters Laboratories, Inc. UL-SU2215

U.S. Patent Numbers:

4,722,800, 5,520,825 & 6,605,224

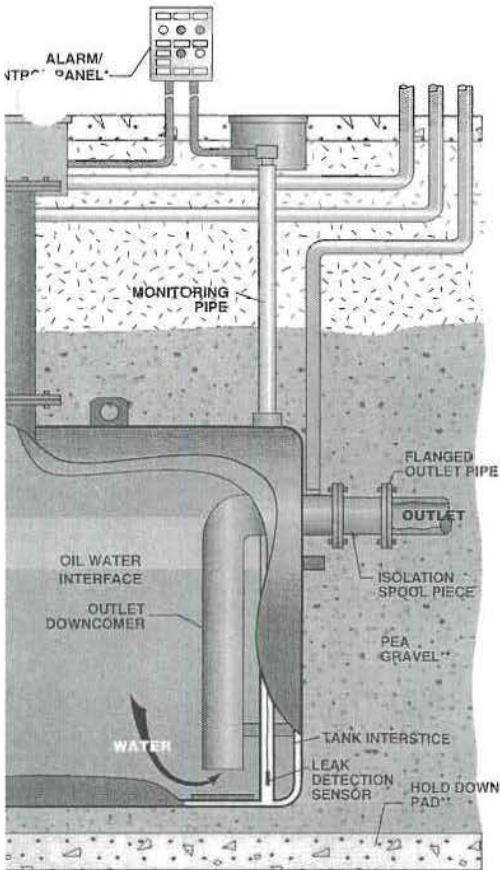
Canadian Patent Numbers:

1,296,263, 1,325,179 & 2,389,065

City of New York, Board of Standards and Appeals Under Calendar Number 1215-88-SA
Massachusetts Board of State Examiners of Plumber and Gas Fitters

Approval Code P1-0594-25

Evaluated to DIN Parts 4 & 5; DIN 38-409 Part 18

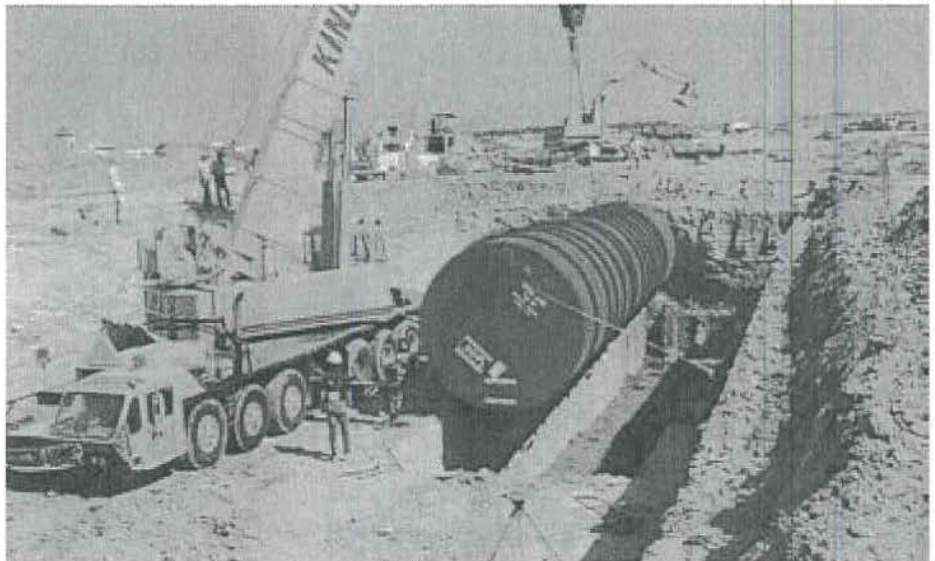


HighGuard Protection System

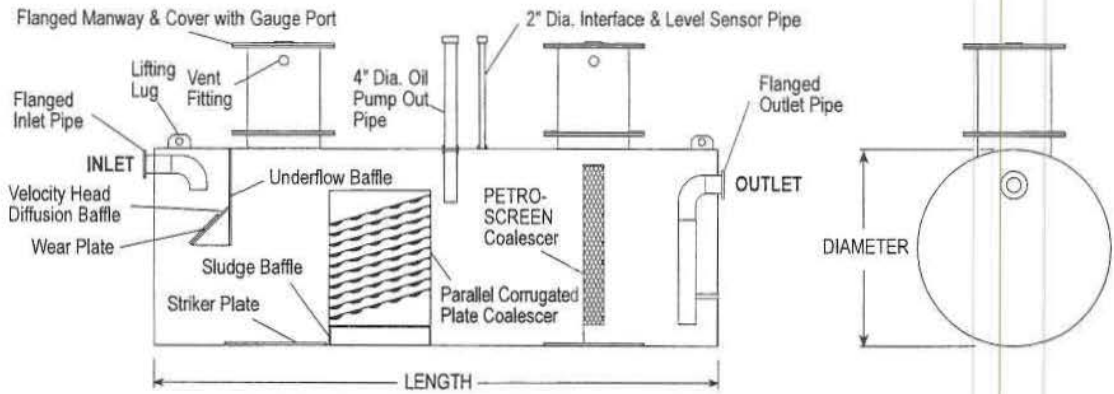
Highland's HighGuard protection systems combines the structural strength of steel separator construction and the lasting protection of a polyurethane coating to produce a high-quality oil/water separator second to none!

The HighGuard protective coating is a solvent-free, tar-free, two component polyurethane coating system that will provide permanent and effective corrosion protection for the effective life of the separator. The very short reaction time of the HighGuard coating allows it to be spray applied with special plural component equipment that ensures an even application over the entire surface of the separator.

HighGuard's 75 mil coating is extremely resistant to surface damage due to impact or abrasion that may occur during transportation and installation. All HighGuard separators are commercially grit-blasted with steel grit to thoroughly clean and prepare the exterior surfaces for coating. This process leaves the separator with a rough-to-the-touch feel, dry and free from any dust, oil, and grease. This surface preparation provides for superior adhesion that minimizes the effects of hot and cold temperatures.



General Arrangement
Model HTC HighGuard,
Single-walled
Oil/Water Separator with
Gravity Discharge shown

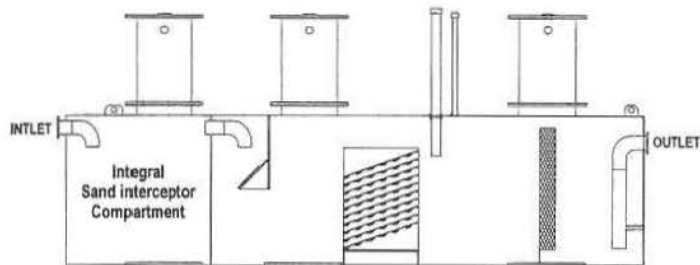


Design Options

Separator installations vary greatly with each location. Highland custom fabricates oil/water separators to satisfy your specific needs. The following information illustrates some of the influent and effluent/product handling options available.

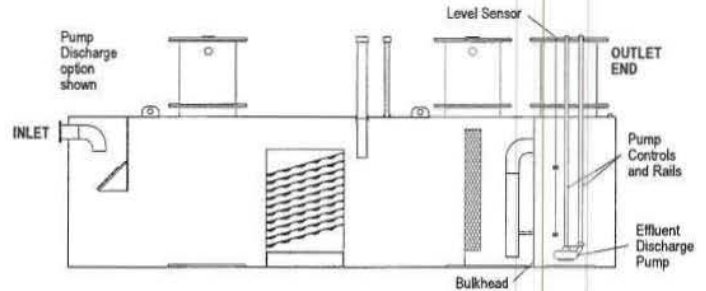
Series G

Series G oil/water separators feature an integral sand interceptor compartment to permit sand and gravel to settle out before the wastewater enters the oil/water separator.



Series J

Series J oil/water separators have an integral effluent pump-out chamber with level controls. The pumped effluent can be routed through Highland's Advanced Filtration System to further reduce the oil content.



Model HT or HTC	Flow Rate Gal/Min	Recommended Oil Pump Out Gallons	Total Volume Gallons	Inlet/ Outlet Diameter	Diameter	Dimensions		
						HT or HTC Length	Series G Length	Series J Length
350	35	70	350	4"	3'-6"	6'-0"	9'-9"	9'-0"
550	55	110	550	4"	3'-6"	7'-9"	10'-9"	10'-9"
1,000	100	200	1,000	6"	4'-0"	10'-9"	14'-0"	14'-0"
2,000	200	400	2,000	6"	5'-4"	12'-0"	15'-0"	15'-3"
3,000	300	600	3,000	8"	5'-4"	18'-0"	21'-4"	21'-4"
4,000	400	800	4,000	8"	5'-4"	24'-0"	28'-8"	28'-8"
5,000	500	1,000	5,000	8"	6'-0"	23'-10"	28'-8"	28'-8"
6,000	600	1,200	6,000	10"	6'-0"	28'-8"	34'-0"	34'-0"
7,000	700	1,400	7,000	10"	7'-0"	24'-4"	28'-8"	28'-8"
8,000	800	1,600	8,000	10"	7'-0"	28'-0"	33'-6"	33'-6"
9,000	900	1,800	9,000	12"	8'-0"	24'-0"	28'-8"	28'-8"
10,000	1,000	2,000	10,000	12"	8'-0"	26'-8"	32'-0"	32'-0"
12,000	1,200	2,400	12,000	12"	8'-0"	32'-0"	38'-9"	38'-9"
15,000	1,500	3,000	15,000	14"	10'-0"	25'-6"	32'-8"	32'-8"
20,000	2,000	4,000	20,000	16"	10'-6"	31'-0"	38'-9"	38'-9"
25,000	2,500	5,000	25,000	18"	10'-6"	38'-9"	46'-6"	46'-6"
30,000	3,000	6,000	30,000	20"	10'-6"	46'-6"	56'-2"	56'-2"
40,000	4,000	8,000	40,000	24"	12'-0"	47'-3"	56'-9"	56'-9"
50,000	5,000	10,000	50,000	24"	12'-0"	59'-6"	**	**
60,000	6,000	12,000	60,000	24"	13'-0"	60'-6"	**	**

Plate spacing and orientation may vary depending on site conditions. ** Contact Highland Tank for sizing information.

Please visit us at www.separatoronline.com • www.highlandtank.com • Email us at wastewater@highlandtank.com



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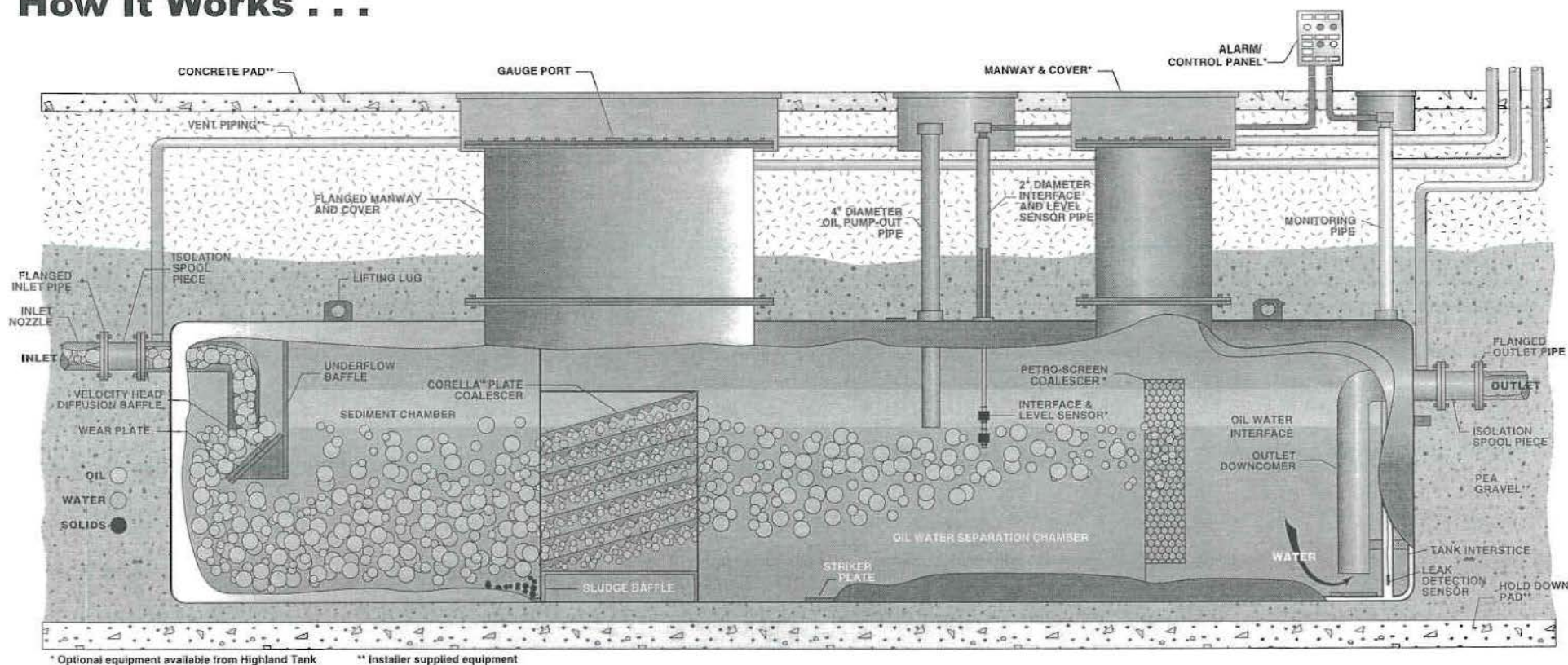
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How It Works . . .



Highland's Patented Design

Highland patented oil/water separators are stationary wastewater treatment vessels, filled with water. They contain specially designed internal baffles and coalescers to accelerate the separation process. The vessel is designed for unconfined access from above for inspection and maintenance.

Inlet flow is directed against the velocity head diffusion baffle to reduce flow turbulence and to distribute the flow evenly over the separator's cross

sectional area. In the sediment chamber, heavy solids settle out and concentrated oil rises to the surface. The oily water then passes through the Corella® Coalescer, an inclined arrangement of stacked parallel flat and corrugated plates.

The corrugated underside of the Corella® plates causes the oil to coalesce into sheets. The oil globules then rise to the surface of the separation chamber, where the separated oil accumulates.

Any remaining solids sink to the top of the plates and slide off of the plates to the solids collection area. The effluent flows downward to the outlet and is discharged by gravity displacement.

To intercept droplets of oil too minute to be removed by the parallel flat/corrugated plates, we use a Petro-Screen polypropylene impingement coalescer (an encased bundle of layered oil-attracting fibers). Large EZ-Access

chambers allow for total, unconfined, unrestricted access from above to the removable Corella® and Petro-Screen coalescers for safe visual inspection, cleaning, and maintenance.

Electronic oil level controls sound an alarm at high oil levels so that waste oil can be removed from the separator. Double-walled separators are monitored with electronic leak detection systems for the interstitial space.

The separator shall be listed to Underwriter's Laboratories UL-SU2215. Construction and performance of the oil/water separators must be in accordance with UL-SU2215. Provide certification documentation detailing criteria under which the system was tested. UL-SU2215 label shall be prominently displayed on manway covers.

Separator shall be designed in accordance with Stokes Law and the American Petroleum Institute Publication 421, "Monographs on Refinery Environmental Control - Management of Water Discharges; Design and Operation of Oil/Water Separators." Effective surface area calculations, signed and stamped by a Registered Professional Engineer shall be submitted to document specified effluent quality based on complete removal of the specified oil globule at design flow. A separator with lower effective surface area than required is not permissible.

Separator capacities, dimensions, construction, and thickness shall be in strict accordance with Underwriters Laboratories, Subject UL-58 Standard for Safety, Steel Underground Tanks for Flammable and Combustible Liquids, September 30, 1997, Single Wall construction.

Separator Corrosion Control System shall be in strict accordance with Underwriters Laboratories Inc. Subject UL-1746 Standard for External Corrosion Protection Systems for Steel Underground Storage Tanks and HighGuard® External Corrosion Protection Specifications.

Oil/water separator shall comply with National Fire Protection Association NFPA 30 Flammable and Combustible Liquids Code, 2003 Edition.

Separator vessel volume shall allow for a hydraulic retention time of ten (10) minutes to ensure laminar flow conditions which result in hydraulic uniformity and high effluent quality. Volume reduction will adversely affect separator performance by increasing horizontal velocity and turbulence, therefore a separator of smaller volume is not permissible.

Separator shall be the standard patented product of a steel tank manufacturer regularly engaged in the production of such equipment. Manufacturer shall have at least 20 years experience in manufacturing similar units for identical applications. No subcontracting of tank fabrication shall be permitted.

Separator shall be fabricated, inspected, and tested for leakage before shipment from the factory by manufacturer as a completely assembled vessel ready for installation.

Separator shall be cylindrical, horizontal, atmospheric-type steel vessel intended for the separation and storage of flammable and combustible liquids. The separator shall have the structural strength to withstand static and dynamic hydraulic loading while empty and during operating conditions. The oil/water separator's dimensions and thickness shall be in strict compliance with Roark's Formulas for Stress and Strain as presented in UL 58, September 30, 1997. Calculations, signed and stamped by a Registered Professional Engineer shall be submitted to document structural strength under specified overbearing or external pressure. A separator with a reduced shell thickness is not permissible.

Separator shall have an oil storage capacity equal to about 43% of the total vessel volume and an emergency oil spill capacity equal to 80% of the total vessel volume.

The separator shall be listed to Underwriter's Laboratories UL-SU2215. Construction and performance of the oil/water separators must be in accordance with UL-SU2215. Provide certification documentation detailing criteria under which the system was tested. UL-SU2215 label shall be prominently displayed on manway covers.

Separator shall be designed in accordance with Stokes Law and the American Petroleum Institute Publication 421, "Monographs on Refinery Environmental Control - Management of Water Discharges; Design and Operation of Oil/Water Separators." Effective surface area calculations, signed and stamped by a Registered Professional Engineer shall be submitted to document specified effluent quality based on complete removal of the specified oil globule at design flow. A separator with lower effective surface area than required is not permissible.

Separator capacities, dimensions, construction, and thickness shall be in strict accordance with Underwriters Laboratories, Subject UL-58 Standard for Safety, Steel Underground Tanks for Flammable and Combustible Liquids, September 30, 1997, Single Wall construction.

Separator Corrosion Control System shall be in strict accordance with Underwriters Laboratories Inc. Subject UL-1746 Standard for External Corrosion Protection Systems for Steel Underground Storage Tanks and HighGuard® External Corrosion Protection Specifications.

Oil/water separator shall comply with National Fire Protection Association NFPA 30 Flammable and Combustible Liquids Code, 2003 Edition.

Separator vessel volume shall allow for a hydraulic retention time of ten (10) minutes to ensure laminar flow conditions which result in hydraulic uniformity and high effluent quality. Volume reduction will adversely affect separator performance by increasing horizontal velocity and turbulence, therefore a separator of smaller volume is not permissible.

Separator shall be the standard patented product of a steel tank manufacturer regularly engaged in the production of such equipment. Manufacturer shall have at least 20 years experience in manufacturing similar units for identical applications. No subcontracting of tank fabrication shall be permitted.

Separator shall be fabricated, inspected, and tested for leakage before shipment from the factory by manufacturer as a completely assembled vessel ready for installation.

Separator shall be cylindrical, horizontal, atmospheric-type steel vessel intended for the separation and storage of flammable and combustible liquids. The separator shall have the structural strength to withstand static and dynamic hydraulic loading while empty and during operating conditions. The oil/water separator's dimensions and thickness shall be in strict compliance with Roark's Formulas for Stress and Strain as presented in UL 58, September 30, 1997. Calculations, signed and stamped by a Registered Professional Engineer shall be submitted to document structural strength under specified overbearing or external pressure. A separator with a reduced shell thickness is not permissible.

Separator shall have an oil storage capacity equal to about 43% of the total vessel volume and an emergency oil spill capacity equal to 80% of the total vessel volume.

To prevent extensive shutdown and maintenance, the separator's coalescer design must allow solids to fall unhindered by turbulence, and oil droplets to rise without risk of re-emulsifying due to collisions with interfering solids. The use of plastic perforated tubes, spherical balls, or irregular shaped media will increase the facility's maintenance costs and shall not be permitted.

Separator shall consist of inlet and outlet connections, non-clogging flow distributor and energy dissipater device, stationary under flow baffle, presettling chamber for solids, sludge baffle, oil coalescing chamber with removable parallel flat/corrugated plate coalescer, with removable plates, and sectionalized removable polypropylene impingement coalescers to optimize separation of free oil from water, effluent downcomer positioned to prevent discharge of free oil that has been separated from the water, access ways for coalescers and each chamber, fittings for vent, oil pump-out, sampling, gauging, and lifting lugs.

Description

Separator shall be standard prefabricated inclined parallel flat/corrugated plate, gravity displacement type unit.

Separator shall be cylindrical with capacities, dimensions, construction, and thickness in strict accordance with Underwriters Laboratories Subject 58, Single Wall construction using flat-flanged heads. Separator shall comply with National Fire Protection Association NFPA 30 Flammable and Combustible Liquids Code, 2003 Edition.

The separator shall be a pre-packaged, pre-engineered, ready to install unit consisting of:

A 4" flanged inlet connection at the inlet end of the separator. Inlet nozzle discharge is located at the furthest diagonal point from the effluent discharge opening.

A velocity head diffusion baffle at the inlet to:

Reduce horizontal velocity and flow turbulence,
Distribute the flow equally over the separator's cross sectional area,
Direct the flow in a serpentine path in order to enhance hydraulic characteristics and fully utilize all separator volume, and
Completely isolate all inlet turbulence from the separation chamber.

A sediment chamber to disperse flow and collect oily solids and sediments.

A sludge baffle to retain settleable solids and sediment and prevent them from entering the separation chamber.

An Oil/Water Separation Chamber containing a removable Corella™ inclined parallel flat/corrugated plate coalescer. The coalescer shall have individual removable plates, sloped towards the sediment chamber. Each coalescing plate shall be flat on the top and corrugated on the bottom. The flat top plate shall resist clogging and clotting with solids. The corrugations of each of the plate bottoms shall be shaped and positioned to enhance collisions between the rising oil droplets and coalescence between them thereby improving separator efficiency. The coalescer shall:

Effect separation of oil and solids from all strata of the wastewater stream.

Shorten the vertical distance that an oil globule or solid particle has to raise or sink, respectively, for effective removal. The minimum plate gap shall be 3/4".

Enhance coalescence and agglomeration by causing the smaller globules and particles (those possessing smaller rising/settling rates) to coalesce and collect on the plates thereby forming larger globules and particles that separate rapidly in water.

Direct the flow paths of the separated oil to the surface of the separator and separated solids to the bottom of the separator.

Allow solids to fall unhindered by turbulence, and oil droplets to rise without risk of re-emulsifying due to collisions with interfering solids.

The Oil/Water Separation Chamber shall also contain a sectionalized removable "Petro-Screen™" polypropylene impingement coalescer designed to intercept oil globules of less than 20 microns in diameter. Heavy, one-piece impingement coalescers are not permissible.

An internal effluent downcomer at the outlet end of the separator, to allow for discharge from the bottom of the separation chamber only.

A 4" flanged effluent connection at the outlet end of the separator.

Fittings for vent, interface/level sensor, and waste oil pump-out, sampling, and gauge.

Two (2) _____ diameter manholes, UL approved, complete with _____ extension, cover, gasket, and bolts. One manway shall be placed between the inlet and the parallel flat/corrugated plate coalescer to facilitate access into sediment chamber for solids removal. One manway shall be placed between the parallel flat/corrugated plate coalescer and outlet to facilitate access into the oil/water separation chamber for oil removal.

Lifting lugs installed at balancing points for handling and installation.

Identification plates: Plates to be affixed in prominent location and be durable and legible throughout equipment life.

HighGuard Corrosion Protection System consisting of:

- Isolation Spool Pieces
- Dielectric Isolation Gaskets and Bushings
- External surfaces commercial grit-blasted, coated 75 mils DFT Self-Reinforcing Polyurethane.

Internal surfaces commercial grit blast and coated with 10 mils DFT heavy duty Polyurethane.

Accessories

Separator shall be supplied with an audible and visual alarm system that indicates hi oil level (visual only) and hi-hi oil level (audible and visual) of oil storage in the oil/water separator will be provided. A silence control shall be provided for the audible alarms. Level sensor(s) to be intrinsically safe. Level sensor floats to be made of stainless steel. The control panel shall be NEMA 4. Power to the control panel is to be [] volt, [] phase.

Separator shall be supplied with Polyester Hold-down straps.

Separator shall be supplied with prefabricated Concrete Deadman Anchors.

Separator shall be supplied with cylindrical and/or rectangular steel Grade Level Manways designed to AASHTO H20 requirements.

Quality Assurance

Submittals:

Shop Drawings: shop drawings for oil water separators shall show principal dimensions and location of all fittings.

Instructions: provide three complete sets of installation, operation, and maintenance instructions with separator.

Quality Control: Quality control, inspection procedures, and reports shall be considered part of the submittal package.

There shall be a limit to the number of submittals for the specified separator. If the separator is not "Approved" or "Approved as Noted" on the second submittal for approval, the engineer reserves the right to refuse further submittals from the same manufacturer and may require the contractor to submit for approval a different manufacturer's product.

Warranty:

The manufacturer shall warrant its products to be free from defects in material and workmanship for a period of one year from the date of shipment. The warranty shall be limited to repair or replacement of the defective part(s).

Highland Tank HighGuard warranty shall be standard limited warranty in effect at time of purchase.

Approved Manufacturers

Highland Tank and Mfg. Co., One Highland Road, Box 338, Stoystown, PA 15563

Phone (814) 893-5701, Facsimile (814)-893-6126,

E-Mail ows.info@highlandtank.com,

Highland Tank shall manufacture the Oil/Water Separator.

<http://www.highlandtank.com>

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

OFFICIAL USE ONLY (effluent guidelines sub-categories)